Approval Number: Not Assigned **NOC ID: 511**

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CONSTRUCTION OF (WTP) LAW VITRIFICATION PLANT

Emission Unit Name: LV-S3 **Emission Unit ID** 547

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	Film Cooler	2	One in operation and one in standby.
	Submerged Bed Scrubber	1	One in operation.
	Wet Electrostatic Precipitator	1	One in operation.
	Injection Air	1	Operational from process vessel vent.
	Heater	2	One in operation and one in standby.
	HEPA	2	Two stages of HEPA filtration. A total of two banks of primary HEPAs one in operation and one in standby. Each bank contains six filters. A total two banks of secondary HEPAs one in operation and one in standby. Each bank contains six filters.
	Exhaust Fan	3	One or two in operation depending on one or two melters in operation. One in standby.
	Caustic Scrubber	1	One in operation.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075	Appendix B, Method 114(3) and (4)	Am-241, Co-60, Cm-244, Cs-137, C-14, Eu-152, Eu-154, I-129, Np-237, Pu-238, Pu-239, Pu-240, Pu-241, Sb-125, Sr-90, Tc-99, Th-232, U-233, U-234, Y-90, Ru-106, Ra-226, U-232, Pa-231, Ac-227 and Th-229	Continuous

Sampling Requirements: Record Sampling

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

Printed on 26-Aug-03

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).

2) This emission unit does not have an abated PTE. This emission unit does not have an unabated PTE.

3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**

the receipt of low-activity waste feed from the Pretreatment Facility and conversion of the waste slurry and glass formers into molten glass. See process descriptions listed below for the individual emission units.

4) This NOC does not have "Annual Possession Quantity" limits.

5) The WDOH has determined that BARCT for emission unit LV-S3 is a system comprising the following control technology, ancillary equipment, protective features, and protective equipment, in the following order: a film cooler, a Submerged Bed Scrubber (SBS), a Wet Electrostatic Precipitator (WESP), an injection of air delivered through a Vessel Vent Header (S52 Stream), a Heater, two stages of High-Efficiency Particulate Air (HEPA) filtration in series, Exhaust Fans, and a Caustic Scrubber. Control technologies for operation of the emission unit that are not regulated by this license (located between the Exhaust Fans and the Caustic Scrubber) are a Heat Exchanger, a Heater, a Thermal Catalytic Oxidizer, two Selective Catalytic Reduction units in series, and back through the Heat Exchanger.

The maximum differential pressure across each filter HEPA bank shall be measured by capacitive pressure sensors.

A minimum differential pressure measurement combined with a calculated total airflow shall be used to check for HEPA Filter bypass. Airflow shall be measured and monitored at the exhaust stack by air pressure probes located to effectively read average air velocity pressure and extract a total airflow. Loss of differential pressure without a coincident reduction in airflow is indicative of filter bypass.

The inlet airstream temperatures for each HEPA filter bank shall be measured by platinum based resistance temperature detectors (RTDs). Thermocouples shall be used in less critical or in higher temperature streams, with careful attention to the design issues to avoid misapplication.

The temperature differential shall be controlled to ensure Relative Humidity (RH) is within acceptable limits. The moisture content of the inlet airstream for each HEPA filter bank shall be measured by a capacitive moisture sensor that is specified to be tolerant of particulate contamination and most chemicals. The dewpoint of offgas air flow shall be measured and subsequently controlled by temperature to ensure that the air stream is above its dewpoint in order to prevent condensation in offgas treatment equipment such as HEPA filters. The various component selections for moisture sensor instruments shall be based on factors that include range, accuracy, offgas stream constituents, and radiation levels.

Prior to cold commissioning the BARCT process must be completed for approval by WDOH for all

indication devices and parameters for all the required BARCT controls and protective features of this emission unit.

Prior to the receipt of waste material the operating ranges for each of the indication devices for all the required BARCT controls and protective features of this emission unit must be provide to WDOH for approval. [WAC 246-247-030(6); WAC 246-247-040(3); WAC 246-247-120]

6) No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to the following:

-Transfer of the LAW melter feed to the LAW melter with air displacement slurry pumps;
-Melting of the glass formers and radioactive melter feed in the LAW melters;
-Discharge of melted glass to waste canisters;
-Waste canister filling.

Detailed descriptions of activities in the areas ventilated by this emission unit will be provided to WDOH prior to cold commissioning. The WDOH reserves the right to determine if changes in this process description constitute a significant modification under WAC 246-247-030 (16) & (25). [WAC 246-247-110(5); WAC 246-247-110(8); WAC 246-247-110(10); WAC 246-247-110(13)]

7) These Conditions and Limitations apply only to the construction of the emission unit and do not allow operation of the emission unit. Prior to operation of this emission unit under "hot commissioning activities" additional conditions and limitations must be obtained from WDOH. [WAC 246-247-060(1)]

8) A minimum of one year prior to cold commissioning of the Waste Treatment Plant, the licensee shall recalculate radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units and submit this information to WDOH together with a request for permission to commence waste processing. The WDOH shall consider this information prior to issuing a license to operate. The license to operate shall contain such additional conditions and limitations as WDOH shall deem necessary and appropriate. [WAC 246-247-110(10,11,12,13,14,15)]

9) DOE and its contractor are fully liable for the design of the Waste Treatment Plant to comply with all applicable laws and regulations and to keep commitments made in all applications to construct under WAC 246-247, including designs completed and proposed to the WDOH and portions not yet designed. [WAC 246-247-110(5)]

10) DOE shall construct the Waste Treatment Plant at its own risk. DOE shall remove or alter any control technology components, and/or any, foundations, support systems, or ancillary construction which are later found not to be in compliance with the applicable standards referenced in WAC 246-247-040 or which are not in compliance with conditions and limitations developed in the WTP permitting process. [WAC 246-247-040(3) & (4)]

11) Any additional licensing necessitated by plant design changes may require additional or different controls for radioactive air emissions. A needed change in the footprint of the plant based on these needs shall not be considered justification for not installing the required controls. [WAC 246-247-040(3) & (4)]

12) Approval of BARCT and operational procedures for the Waste Treatment Plant are based on the design plant radioactive waste processing capacity as estimated in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant," BNI

Document Number 24590-WTP-RPT-ENV-01-008, Rev. 1, dated 14 June 2002. The Washington Department of Health reserves the right to require additional control technology and/or monitoring, different emissions limits, and different or additional conditions, and limitations in the case that future plant design changes should result in significantly different design radioactive waste throughput.

Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC. [WAC 246-247-040 (3)]

13) Conditions and Limitations for construction activities must be documented in an established procedure matrix or commitment matrix database within 90 days after full construction authorization is received from WDOH. The procedure matrix or commitment matrix database for operational conditions shall be completed no later than 180 days before receipt of radioactive waste into the WTP to start Hot Commissioning and identify the specific procedures which will satisfy the Conditions and Limitations. This requirement may be satisfied for such of these Conditions and Limitations as are related only to the operational phase of radioactive waste processing (as opposed to the construction of the facility) by descriptions of specific procedures which will be completed no later than 90 days prior to the hot commissioning of the facility. [WAC 246-247-040(5); WAC 246-247-060(5); WAC 246-247-075(6); ASME NQA-1-1997]

14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance. [WAC 246-247-060-(2)(d)]

15) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. Prior to commencement of testing of regulated systems, the WTP shall provide a schedule for testing of all regulated components of that system to WDOH. The department reserves the right to observe such tests. [WAC 246-247-060(4)]

16) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards. [WAC 246-247-040(5); WAC 246-247-060(6)WAC 246-247-075(6); 40CFR61.93(b)(2)(iv); 40CFR61, Appendix B, Method 114]

17) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10).

18) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures. [WAC 246-247-075(12)]

19) The facility must be able to demonstrate the reliability and accuracy of emissions data from this emission unit. [WAC 246-247-075(13)]

20) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter. [WAC 246-247-080(1)]

21) The department may require an ALARACT demonstration at any time. [WAC 246-247-080(1)]

22) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. [WAC

246-247-080(2)]

23) The facility shall report all measured or calculated emissions annually. [WAC 246-247-080(3)]

24) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5). [WAC 246-247-080(5)]

25) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity shall not be considered permanently shut down or completed until a report of closure is received and approved by the Department of Health.

    Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity. All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8). [WAC 246-247(6) and (8)]

26) All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the WDOH. [40 CFR 61.95; WAC 246-247-080(8)]

27) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection. WDOH inspectors shall be allowed to use audio/visual equipment to document inspections. [WAC 246-247-080(9)]

28) The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The USDOE shall allow access to classified documents by representatives of the department with the appropriate clearance and demonstrable need-to-know. [WAC 246-247-080(10)]

29) a) The DOE shall ensure all emission unit components, design, construction, testing and operation shall be carried out as described in the "Washington Sate Department of Health Code Compliance Matrices for the Waste Treatment Plant Process Gas Treatment Systems, 24590-WTP-RPT-ENG-02-015, Rev. B, dated November 04, 2002. [WAC 246-247-120]

b) Emission unit components design, construction, testing, and operation different from those identified in "Washington Sate Department of Health Code Compliance Matrices for the Waste Treatment Plant Process Gas Treatment Systems, 24590-WTP-RPT-ENG-02-015, Rev. B, dated November 04, 2002, are not approved, and if carried out, are at risk of enforcement action pursuant to WAC 246-247-100. [WAC 246-247-120]

c) Should a deviation to a standard be identified after start of construction, WDOH approval of the deviation shall be obtained prior to installation of the system or component. The procedure for the compliance matrices maintenance shall be followed in this event. [WAC 246-247-120]

d) Within 90 days after starting activities granted by this approval, a procedure must be provided to WDOH identifying how the compliance matrix outlining compliance with the control technology standards shall be maintained and updated. [WAC 246-247-120]

30) Prior to installation of the following ventilation components, complete documentation verifying compliance with the applicable standards the "Washington Sate Department of Health Code Compliance Matrices for the Waste Treatment Plant Process Gas Treatment Systems, 24590-WTP-RPT-ENG-02-015, Rev. B, dated November 04, 2002, shall be made available for review and approval by WDOH: HEPA filter housing, exhaust fans, valves, piping, and indication devices. [WAC 246-247-120]

31) The monitoring system for this emission unit shall be designed and operated in full compliance to ANSI N13.1-1999. Prior to installation of emission unit monitoring systems final design of the monitoring systems shall be provided to WDOH for review and approval. [WAC 246-247-075(2); WAC 246-247-120; 40 CFR Part 61.93]

32) The annual ILAW production from the LAW plant shall not exceed 1.825 E4 metric tons/year, based on glass as the waste form. [WAC 246-247-030(5); WAC 246-47-110 (10)]

33) HEPA filters shall be tested in-place after installation and at least annually thereafter. The test shall be performed in accordance with Section TA of "Code on Nuclear Air and Gas Treatment, ASME AG-1-1997". Tests shall demonstrate that each filter bank has a removal efficiency no less than 99.95%. [WAC 246-247-120]

34) Radial flow HEPA filter qualification certification testing must be performed by an independent test facility in accordance with the requirements of "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. Prior to installation of the radial flow HEPA filters that are installed for hot commissioning, the certification test results shall be provided to WDOH for qualification concurrence of the radial flow HEPA filters to "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. [WAC 246-247-120]

35) Total design flow through each HEPA filter bank shall not exceed the maximum rated flowrate for the individual HEPA filters multiplied by the number of filters in the bank.

The actual flowrate through each filter bank shall be verified and results of this demonstration shall be presented to WDOH for approval prior to hot startup.

[WAC 246-247-120]

36) The USDOE shall develop, and submit to WDOH for approval, criteria for an annual USDOE

inspection of the overall system integrity of this unit (e.g., corrosion damage, leakage, vibration damage, structural damage, and component deterioration). This inspection shall include determination of need for any replacements. A log of inspection findings shall be maintained in a format approved for this emission unit by the WDOH. [WAC 246-247-120]

37) USDOE shall provide to WDOH for approval a proposal for tracking the annual possession quantity (APQ) for this emission unit to WDOH prior to hot commissioning. [WAC 246-247-080(7)]

38) For the equipment identified as control technology, ancillary equipment, protective features, and protective equipment under this approval, the USDOE shall:

-provide critical operating parameters;
-develop acceptable operating ranges;
-develop operating procedures to monitor and maintain these parameters;
-provide descriptions of procedures to WDOH for review and approval.

These actions shall be completed prior to receiving approval for accepting radioactive material into the WTP.

[WAC 246-247-120]

39) The USDOE shall provide test results to demonstrate to the WDOH that HEPA filters in this emission control unit are operating at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. The USDOE shall provide manufacturer's specifications and/or research and development data, including published removal efficiencies and installation requirements, to demonstrate to WDOH that the Submerged Bed Scrubber, Wet Electrostatic Precipitator, and Caustic Scrubber in this emission control unit are intended to operate at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. This information shall be provided to the WDOH at least 90 days prior to hot commissioning.

Where actual measurements are impossible, the USDOE shall provide to the WDOH for approval prior to hot startup sufficient information to demonstrate that the control equipment has been installed in accordance with manufacturers' specifications. Where the application depends on research and development data, the USDOE shall provide to the WDOH for approval prior to hot startup sufficient information to demonstrate that the control equipment has been installed in a manner consistent with the conditions under which the research and development data was obtained. [WAC 246-247-120]

40) The differential pressure across each filter bank shall be monitored, recorded, and trended. Specifications for instrumentation shall be provided to WDOH prior to installation.

Prior to hot commissioning, the range of differential pressure which shall be maintained across the HEPA filter bank shall be provided to WDOH. [WAC 246-247-120]

41) If temperatures of air entering the HEPA filters exceed the manufacturer's recommendations for the filters, WDOH shall be notified and the cause of the temperature excursion shall be determined. HEPA filters shall be evaluated for the need to be replaced. [WAC 246-247-120]

42) Prior to cold commissioning, the USDOE shall provide documentation to the WDOH for approval to demonstrate that humidity in the airstream entering the HEPA filter bank shall be maintained below the manufacturer's specified maximum. [WAC 246-247-120]

43) The USDOE shall notify the WDOH before initiating use of the maintenance ventilation bypass line for the Submerged Bed Scrubber (SBS) and the Wet Electrostatic Precipitator (WESP). Prior to initiating use of the maintenance ventilation bypass line for the SBS and the WESP, waste feed to the LAW Melter shall be halted, and the melter shall be placed into an idle condition. All emissions control system components for emission unit LV-S3 shall remain online for sufficient time after initiation of melter idling to allow the cold cap to burn off. Waste feed to the melter shall be halted when the maintenance bypass line for the SBS and WESP is in use. While the SBS/WESP maintenance bypass line is in use, offgas shall be treated with all other emission control systems for emission unit LV-S3, including the HEPA filtration, and caustic scrubber. Temperature of the offgas air stream incident to system HEPA filters shall be sufficiently low (less than 100 oC) to ensure that cesium-137 and technetium-99 are in aerosol form and are captured by the HEPA filters.

    Prior to hot commissioning, appropriate procedures to initiate this by-pass system shall be established and documentation describing these procedures shall be presented to WDOH for review and approval. [WAC 246-247-120]

44) The USDOE shall notify the WDOH before initiating use of the maintenance ventilation bypass line for the LAW Caustic Scrubber. Prior to initiating use of the maintenance ventilation bypass line for the LAW Caustic Scrubber, waste feed to the LAW Melter shall be halted, and the melter shall be placed into an idle condition. All offgas emissions control system components for emission unit LV-S3 shall remain online for sufficient time after initiation of melter idling to permit the cold cap to burn off and to finish for iodine-129 offgassing. Waste feed to the melter shall be halted when the maintenance bypass line for the LAW Caustic Scrubber is in use. While the LAW Caustic Scrubber maintenance bypass line is in use, offgas shall be treated with all other emission control system components for emission unit LV-S3, including the SBS, WESP, and HEPA filtration.

    Prior to hot commissioning, appropriate procedures to initiate this by-pass system shall be established, and documentation describing these procedures shall be presented to WDOH for review and approval. [WAC 246-247-120]

45) The USDOE shall notify the WDOH before initiating replacement of a melter unit in the LAW. Prior to initiating replacement of the melter unit, waste feed to the LAW Melter shall be halted, and the melter shall be placed into an idle condition. All emissions control system components for emission unit LV-S3 shall remain online for a minimum period of time after initiation of melter idling to allow the cold cap to burn off. Prior to hot commissioning, appropriate procedures to initiate replacement of a failed melter shall be established, and documentation describing these procedures shall be presented to WDOH for review and approval. [WAC 246-247-120]

46) External surface smearable contamination concentrations for failed LAW melters package being removed from the facility for storage and/or disposal shall not exceed 1000 dpm/100 cm2 for beta/gamma emitters or 20 dpm/100 cm2 for alpha emitters. [WAC 246-247-110(10,11,12,13)]

47) The differential pressure across the submerged bed scrubber shall be monitored, recorded, and trended. Prior to hot commissioning, parameters appropriate for measuring the performance of the SBS and operating ranges for these parameters shall be established and presented to WDOH for approval. [WAC 246-247-120]

48) The pH of the caustic scrubber fluid shall be monitored, recorded, and trended during operation. Prior to hot commissioning, parameters appropriate for measuring the performance of the caustic scrubber and operating ranges for these parameters shall be established and presented to WDOH for approval. [WAC 246-247-120]

49) Uninterrupted electrical power with subsequent alternate power supplied by on-site generators shall be available for the offgas exhausters upon loss of normal facility electrical power. [WAC 246-247-120]

50) The WDOH shall be notified prior to installation of the mechanical reamer for the LAW film cooler. [WAC 246-247-120]

51) Emission unit LV-S3 shall be continuously monitored. Radionuclides which contribute 10% of the unabated dose or greater, or produce an unabated dose of 0.1mrem/yr, and radionuclides that contribute 25% of the abated dose or greater shall be sampled, analyzed, and reported. The LV-S3 emission unit sampling system shall be designed to analyze at a minimum the following radionuclides: Am-241, Co-60, Cm-244, Cs-137, C-14, Eu-152, Eu-154, I-129, Np-237, Pu-238, Pu-239, Pu-240, Pu-241, Sb-125, Sm-151, Sr-90, Tc-99, Th-232, U-233, U-234, Y-90, Ru-106, Ra-226, U-232, Pa-231, Ac-227, Th-229.

    Prior to hot commissioning, the procedure to manage down time or failure time of continuous sampling and monitoring equipment will be developed and submitted to WDOH for review and approval. [WAC 246-247-040(1); WAC 246-247-075]

52) Analysis and quality assurance of stack sampling shall follow the requirements of 40 CFR 61 Appendix B Method 114 sections 3 and 4. [WAC 246-247-040(1); WAC 246-247-075]

53) A new air sampling station shall be established at a distance of approximately 1500 meters in the ESE direction from WTP. This sampling station is hereinafter called the "New Station".

54) The following ambient air sampling stations shall be operated as a monitoring network, with all sampling, analysis, interpretation, and reporting to managed as a single entity: a) the New Station, b) Vit Plant North, c) B Pond, d) 200 ESE, e) N-977, f) N-985, g) N-158, h) N-984, i) N-498, j) N-499, k) West End Fir Road.

55) At all 11 of these stations the following air sampling regime shall be conducted: a) gross alpha/gross beta samples shall be collected on a bi-weekly basis (particulate air filters operated for two-week periods); b) particulate air samples shall be composited on a monthly basis and analyzed by gamma scan for the following radionuclides: 106Ru, 125Sb, 134Cs, 137Cs, 154Eu, and 241Am, plus any other radionuclides with positive activities greater than the MDA; and c) particulate air samples shall be composited on a quarterly basis and analyzed with appropriate radiochemical methods for 90Sr and 239-240Pu.

56) At the New Station, the Station at 200 ESE, and the Station at the West End of Fir Road, the following additional air samples shall be collected: a) tritium samples shall be obtained with silica gel or molecular sieve filters, collected approximately monthly, and the extracted moisture shall be analyzed by liquid scintillation; b) continuous air samples shall be collected on a monthly basis with appropriate sample media and analyzed with appropriate radiochemical techniques for 14C; and c) continuous air samples shall be collected with appropriate media and combined on a quarterly basis to be analyzed with appropriate radiochemical techniques for 129I.

57) Sampling and sample analysis regimes used for WTP ambient air monitoring shall meet or exceed the following minimum detectable concentrations over the above specified sampling periods:

ANALYSIS	Minimum Detectable Concentration
Gross Alpha:	0.001 pCi/m3
Gross Beta:	0.003 pCi/m3
Tritium:	3 pCi/m3
Strontium-90 :	0.0001 pCi/m3
Iodine-129 :	0.00001 pCi/m3
Gamma Scan (137Cs) :	0.01

58) Preoperational monitoring shall be performed to obtain a baseline of all analytes prior to commencement of processing of radioactive waste at the WTP. A baseline dataset of 12 contiguous months of validated data shall be provided to WDOH for review and approval.

59) The operational status of the data management system for collecting, validating, and evaluating WTP ambient monitoring data shall be demonstrated to WDOH by providing in report form the baseline dataset of 12 contiguous months of validated data of all analytes for review and approval.

60) Validated gross beta sample results from all 10 stations shall be reported within 30 days of sample collection, and all data shall be promptly analyzed for trends.

61) All HEPA filter banks in this unit's emission control system shall be subjected to aerosol penetration tests in accordance with "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", and the results of these tests shall be provided to WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

62) Air sample transport lines shall be designed to prevent moisture condensation within the lines. Design details shall be provided to WDOH prior to cold commissioning. [WAC 246-247-120]

63) Volume reduction equipment ("HEPA Compactors") shall not be incorporated into areas ventilated by emission unit LV-S3. [WAC 246-247-120]

Approval Number: Not Assigned **NOC ID: 511**

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CONSTRUCTION OF (WTP) LAW VITRIFICATION PLANT

Emission Unit Name: LV-C2 **Emission Unit ID** 548

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	One stage of HEPA filtration. A total of ten banks of primary HEPAs nine in operation and one in standby. Each bank contains six filters.
	Exhaust Fan	2	Two in operation.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075	Appendix B, Method 114(3) and (4)	Gross Alpha and Gross Beta/Gamma	Shall be determined prior to cold commissioning
Sampling Requirements:	Record Sampling		

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

12/05/2002 NOC received June 26, 2002.

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
2) This emission unit does not have an abated PTE. This emission unit does not have an unabated PTE.
3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
   the receipt of low-activity waste feed from the Pretreatment Facility and conversion of the waste slurry and glass formers into molten glass. See process descriptions listed below for the individual emission units.
4) This NOC does not have "Annual Possession Quantity" limits.

5) The WDOH has determined that BARCT for emission unit LV-C2 is a system comprising the following control technology, ancillary equipment, protective features, and protective equipment, in the following order: a single stage of High-Efficiency Particulate Air (HEPA) filtration, and Exhaust Fans.

   The maximum differential pressure across each HEPA filter bank shall be measured by capacitive pressure sensors.

   A minimum differential pressure measurement combined with a calculated total airflow shall be used to check for HEPA Filter bypass. Airflow shall be measured and monitored at the exhaust stack by air pressure probes located to effectively read average air velocity pressure and extract a total airflow. Loss of differential pressure without a coincident reduction in airflow is indicative of filter bypass.

   Space temperatures from which C2 air is exhausted shall be measured as the inlet airstream temperature for each HEPA filter bank by platinum based resistance temperature detectors (RTDs). Thermocouples shall be used in less critical or in higher temperature streams, with careful attention to the design issues to avoid misapplication.

   The C2V exhaust air stream temperature shall at all times be above the dewpoint, therefore Relative Humidity (RH) for this emission unit shall not be a required HEPA operating parameter nor shall an indication device be required. Should design or operations change in such a way that RH becomes a key operating parameter for the HEPA banks of this emission unit, an indication device shall be required prior to implementing the change.

   Prior to cold commissioning the BARCT process must be completed for approval by WDOH for all indication devices and parameters for all the required BARCT controls and protective features of this emission unit.

   Prior to the receipt of waste material the operating ranges for each of the indication devices for all the required BARCT controls and protective features of this emission unit must be provide to WDOH for approval.

   [WAC 246-247-030(6); WAC 246-247-040(3); WAC 246-247-120]

6) No activities, other than those explicitly described within this approval, shall be conducted without prior written approval.

   The approved activities are limited to the following:

   -Transport of bagged failed manipulator for repair within C3 workshop;
   -Transport of packaged failed melter for storage at the Balance-of-Facilities (BOF)
   -Transport of packaged melter consumables;
   -Transport of containerized failed equipment for storage at the BOF;
   -Transport of containerized miscellaneous wastes for storage at the BOF;
   -Transport of process samples via autosampler;
   -Transport of Personal Protective Equipment;
   -Filter changeout, aerosol testing, and transport of spent filters;
   -Exhaust Fan maintenance.

Detailed descriptions of activities in the areas ventilated by this emission unit will be provided to WDOH prior to cold commissioning. The WDOH reserves the right to determine if changes in this process description constitute a significant modification under WAC 246-247-030 (16) & (25).

[WAC 246-247-110(5); WAC 246-247-110(8); WAC 246-247-110(10); WAC 246-247-110(13)]

7) These Conditions and Limitations apply only to the construction of the emission unit and do not allow operation of the emission unit. Prior to operation of this emission unit under "hot commissioning activities" additional conditions and limitations must be obtained from WDOH. [WAC 246-247-060(1)]

8) A minimum of one year prior to cold commissioning of the Waste Treatment Plant, the licensee shall recalculate radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units and submit this information to WDOH together with a request for permission to commence waste processing. The WDOH shall consider this information prior to issuing a license to operate. The license to operate shall contain such additional conditions and limitations as WDOH shall deem necessary and appropriate. [WAC 246-247-110 (10,11, 12, 13, 14, 15)]

9) DOE and its contractor are fully liable for the design of the Waste Treatment Plant to comply with all applicable laws and regulations and to keep commitments made in all applications to construct under WAC 246-247, including designs completed and proposed to the WDOH and portions not yet designed. [WAC 246-247-110 (5)]

10) DOE shall construct the Waste Treatment Plant at its own risk. DOE shall remove or alter any control technology components, and/or any, foundations, support systems, or ancillary construction which are later found not to be in compliance with the applicable standards referenced in WAC 246-247-040 or which are not in compliance with conditions and limitations developed in the WTP permitting process. [WAC 246-247-040(3) & (4)]

11) Any additional licensing necessitated by plant design changes may require additional or different controls for radioactive air emissions. A needed change in the footprint of the plant based on these needs shall not be considered justification for not installing the required controls. [WAC 246-247-040(3) & (4)]

12) Approval of BARCT and operational procedures for the Waste Treatment Plant are based on the design plant radioactive waste processing capacity as estimated in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant," BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev. 1, dated 14 June 2002. The Washington Department of Health reserves the right to require additional control technology and/or monitoring, different emissions limits, and different or additional conditions, and limitations in the case that future plant design changes should result in significantly different design radioactive waste throughput.

Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC.

[WAC 246-247-040(3)]

13) Conditions and Limitations for construction activities must be documented in an established procedure

matrix or commitment matrix database within 90 days after full construction authorization is received from WDOH. The procedure matrix or commitment matrix database for operational conditions shall be completed no later than 180 days before receipt of radioactive waste into the WTP to start Hot Commissioning and identify the specific procedures which will satisfy the Conditions and Limitations. This requirement may be satisfied for such of these Conditions and Limitations as are related only to the operational phase of radioactive waste processing (as opposed to the construction of the facility) by descriptions of specific procedures which will be completed no later than 90 days prior to the hot commissioning of the facility. [WAC 246-247-040(5); WAC 246-247-060(5); WAC 246-247-075(6); ASME NQA-1-1997]

14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance. [WAC 246-247-060-(2)(d)]

15) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. Prior to commencement of testing of a regulated system, the WTP shall provide a schedule for testing of all regulated components of that system to WDOH. The department reserves the right to observe such tests. [WAC 246-247-060(4)]

16) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards. [WAC 246-247-040(5); WAC 246-247-060(6); WAC 246-247-075(6); 40CFR61.93(b)(2)(iv); 40CFR61, Appendix B, Method 114]

17) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10).

18) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures. [WAC 246-247-075(12)]

19) The facility must be able to demonstrate the reliability and accuracy of emissions data from this emission unit. [WAC 246-247-075(13)]

20) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter. [WAC 246-247-080(1)]

21) The department may require an ALARACT demonstration at any time. [WAC 246-247-080(1)]

22) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. [WAC 246-247-080(2)]

23) The facility shall report all measured or calculated emissions annually. [WAC 246-247-080(3)]

24) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5). [WAC 246-247-080(5)]

25) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a

report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity shall not be considered permanently shut down or completed until a report of closure is received and approved by the Department of Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity. All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8). [WAC 246-247(6) and (8)]

26) All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the WDOH. [40 CFR 61.95; WAC 246-247-080(8)]

27) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection. WDOH inspectors shall be allowed to use audio/visual equipment to document inspections. [WAC 246-247-080(9)]

28) The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The USDOE shall allow access to classified documents by representatives of the department with the appropriate clearance and demonstrable need-to-know. [WAC 246-247-080(10)]

29) a) The DOE shall ensure all emission unit components, design, construction, testing and operation shall be carried out as described in the WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" and the WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003. [WAC 246-247-120]

b) Emission unit components design, construction, testing, and operation different from those identified in WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" and the WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003 are not approved, and if carried out, are at risk of enforcement action pursuant to WAC 246-247-100. [WAC 246-247-120]

c) Should a deviation to a standard be identified after start of construction, WDOH approval of the deviation shall be obtained prior to installation of the system or component. The procedure for the compliance matrices maintenance shall be followed in this event. [WAC 246-247-120]

d) Within 90 days after starting activities granted by this approval, a procedure must be provided to WDOH identifying how the compliance matrix outlining compliance with the control technology standards shall be maintained and updated. [WAC 246-247-120]

30) Prior to installation of the following ventilation components, complete documentation verifying compliance with the applicable standards the WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" and the WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003 shall be made available for review and approval by WDOH: HEPA filter housing, exhaust fans, dampers, ductwork, and indication devices. [WAC 246-247-120]

31) The monitoring system for this emission unit shall be designed and operated in full compliance to ANSI N13.1-1999. Prior to installation of emission unit monitoring systems final design of the monitoring systems shall be provided to WDOH for review and approval. [WAC 246-247-075(2); WAC 246-247-120; 40 CFR Part 61.93]

32) The annual ILAW production from the LAW plant shall not exceed 1.825 E4 metric tons/year, based on glass as the waste form. [WAC 246-247-030(5); WAC 246-47-110 (10)]

33) HEPA filters shall be tested in-place after installation and at least annually thereafter. The test shall be performed in accordance with Section TA of "Code on Nuclear Air and Gas Treatment, ASME AG-1-1997". Tests shall demonstrate that each filter bank has a removal efficiency no less than 99.95%. [WAC 246-247-120]

34) Radial flow HEPA filter qualification certification testing must be performed by an independent test facility in accordance with the requirements of "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. Prior to installation of the radial flow HEPA filters that are installed for hot commissioning, the certification test results shall be provided to WDOH for qualification concurrence of the radial flow HEPA filters to "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. [WAC 246-247-120]

35) Total design flow through each HEPA filter bank shall not exceed the maximum rated flowrate for the individual HEPA filters multiplied by the number of filters in the bank.

    The actual flowrate through each filter bank shall be verified and results of this demonstration shall be presented to WDOH for approval prior to hot startup.

    [WAC 246-247-120]

36) The USDOE shall develop, and submit to WDOH for approval, criteria for an annual USDOE inspection of the overall system integrity of this unit (e.g., corrosion damage, leakage, vibration damage, structural damage, and component deterioration). This inspection shall include determination of need for any replacements. A log of inspection findings shall be maintained in a format approved for this emission unit by the WDOH. [WAC 246-247-120]

37) USDOE shall provide to WDOH for approval a proposal for tracking the annual possession quantity (APQ) for this emission unit to WDOH prior to hot commissioning. [WAC 246-247-080 (7)]

38) For the equipment identified as control technology, ancillary equipment, protective features, and protective equipment under this approval, the USDOE shall:

-provide critical operating parameters;
-develop acceptable operating ranges;
-develop operating procedures to monitor and maintain these parameters;
-provide descriptions of procedures to WDOH for review and approval.

These actions shall be completed prior to receiving approval for accepting radioactive material into the WTP.

[WAC 246-247-120]

39) The USDOE shall provide test results to demonstrate to the WDOH that HEPA filters in this emission control unit are operating at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. The results of these tests shall be provided to the WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

40) The differential pressure across each filter bank shall be monitored, recorded, and trended. Specifications for instrumentation shall be provided to WDOH prior to installation.Prior to hot commissioning, the range of differential pressure which shall be maintained across the HEPA filter bank shall be provided to WDOH. [WAC 246-247-120]

41) Prior to cold commissioning, the USDOE shall provide documentation to the WDOH for approval to demonstrate that humidity in the airstream entering the HEPA filter bank shall be maintained below the manufacturer's specified maximum. [WAC 246-247-120]

42) Surface concentrations of smearable contamination for surface areas within C2 ventilation areas shall not exceed 1,000 dpm/100 cm2 for beta/gamma emitters or 20 dpm/100 cm2 for alpha emitters. [WAC 246-247-110(10,11,12,13)]

43) The USDOE shall perform radiation surveys on at least a quarterly basis of the smearable surface radioactive contamination of exposed surface areas ventilated by emission unit LV-C2. The USDOE shall use the data from these surveys to demonstrate that the annual average surface concentration of beta/gamma emitters does not exceed 1000 dpm/100 cm2 over a surface area of 2165 m2, and that the annual average surface concentration of alpha emitters does not exceed 1000 dpm/100 cm2 over a surface area of 2165 m2 .[WAC 246-247-110(10,11,12,13)]

44) Differential pressures shall be monitored between C2 and C3 areas to ensure air flow is from the C2 to C3 areas. [WAC 246-247-120]

45) Interlocks shall be in place to prevent operation of the LV-C2 emission unit upon loss of power to the C3 ventilation. [WAC 246-247-120]

46) For emission unit LV-C2, periodic confirmatory sampling for particulates shall be performed, with analyses for gross alpha and gross beta/gamma. [WAC 246-247-040(1); WAC 246-247-075]

47) Analysis and quality assurance of stack sampling shall follow the requirements of 40 CFR 61 Appendix B Method 114 sections 3 and 4. [WAC 246-247-040(1); WAC 246-247-075]

48) All HEPA filter banks in this unit's emission control system shall be subjected to aerosol penetration tests in accordance with "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", and the results of these tests shall be provided to WDOH at least 90 days prior to hot commissioning.

[WAC 246-247-120]

49) Air sample transport lines shall be designed to prevent moisture condensation within the lines. Design details shall be provided to WDOH prior to cold commissioning. [WAC 246-247-120]

50) Volume reduction equipment ("HEPA Compactors") shall not be incorporated into areas ventilated by emission unit LV-C2. [WAC 246-247-120]

51) WTP shall identify maintenance activities that will require localized controls for particulates. Design details of the controls shall be provided to WDOH for approval prior to hot commissioning. [WAC 246-247-120]

Approval Number: Not Assigned **NOC ID: 511**

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CONSTRUCTION OF (WTP) LAW VITRIFICATION PLANT

Emission Unit Name: LV-S1 **Emission Unit ID** 549

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	One stage of HEPA filtration. A total of ten banks of primary HEPAs nine in operation and one in standby. Each bank contains four filters.
	Exhaust Fan	2	One in operation and one in standby.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075	Appendix B, Method 114(3) and (4) .	Gross Alpha and Gross Beta/Gamma	Shall be determined prior to cold commissioning

Sampling Requirements: Record Sampling

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

12/05/2002 NOC received June 26, 2002.

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
2) This emission unit does not have an abated PTE. This emission unit does not have an unabated PTE.
3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
   the receipt of low-activity waste feed from the Pretreatment Facility and conversion of the waste slurry and glass formers into molten glass. See process descriptions listed below for the individual emission units.

4) This NOC does not have "Annual Possession Quantity" limits.

5) The WDOH has determined that BARCT for emission unit LV-S1 is a system comprising the following control technology, ancillary equipment, protective features, and protective equipment, in the following order: a single stage of High-Efficiency Particulate Air (HEPA) filtration, and Exhaust Fans.

   The maximum differential pressure across each HEPA filter bank shall be measured by capacitive pressure sensors.

   A minimum differential pressure measurement combined with a calculated total airflow shall be used to check for HEPA Filter bypass. Airflow shall be measured and monitored at the exhaust stack by air pressure probes located to effectively read average air velocity pressure and extract a total airflow. Loss of differential pressure without a coincident reduction in airflow is indicative of filter bypass.

   Space temperatures from which C3 air is exhausted shall be measured as the inlet airstream temperature for each HEPA filter bank by platinum based resistance temperature detectors (RTDs). Thermocouples shall be used in less critical or in higher temperature streams, with careful attention to the design issues to avoid misapplication.

   The C3V exhaust air stream temperature shall at all times be above the dewpoint, therefore Relative Humidity (RH) for this emission unit shall not be a required HEPA operating parameter nor shall an indication device be required. Should design or operations change in such a way that RH becomes a key operating parameter for the HEPA banks of this emission unit, an indication device shall be required prior to implementing the change.

   Prior to cold commissioning the BARCT process must be completed for approval by WDOH for all indication devices and parameters for all the required BARCT controls and protective features of this emission unit.

   Prior to the receipt of waste material the operating ranges for each of the indication devices for all the required BARCT controls and protective features of this emission unit must be provide to WDOH for approval. [WAC 246-247-030(6); WAC 246-247-040(3); WAC 246-247-120]

6) No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to the following:

   exhaust fan maintenance; tool maintenance; manipulator repair; valve repair; CCB repairs; decontamination activities; bulge preventative maintenance.

   Detailed descriptions of activities in the areas ventilated by this emission unit will be provided to WDOH prior to cold commissioning. The WDOH reserves the right to determine if changes in this process description constitute a significant modification under WAC 246-247-030 (16) & (25).[WAC 246-247-110(5); WAC 246-247-110(8); WAC 246-247-110(10); WAC 246-247-110(13)].

7) These Conditions and Limitations apply only to the construction of the emission unit and do not allow operation of the emission unit. Prior to operation of this emission unit under "hot commissioning activities" additional conditions and limitations must be obtained from WDOH. [WAC 246-247-060(1)]

8) A minimum of one year prior to cold commissioning of the Waste Treatment Plant, the licensee shall recalculate radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units and submit this information to WDOH together with a request for permission to commence waste processing. The WDOH shall consider this information prior to issuing a license to operate. The license to operate shall contain such additional conditions and limitations as WDOH shall deem necessary and appropriate. [WAC 246-247-110 (10,11, 12, 13, 14, 15)]

9) DOE and its contractor are fully liable for the design of the Waste Treatment Plant to comply with all applicable laws and regulations and to keep commitments made in all applications to construct under WAC 246-247, including designs completed and proposed to the WDOH and portions not yet designed. [WAC 246-247-110 (5)]

10) DOE shall construct the Waste Treatment Plant at its own risk. DOE shall remove or alter any control technology components, and/or any, foundations, support systems, or ancillary construction which are later found not to be in compliance with the applicable standards referenced in WAC 246-247-040 or which are not in compliance with conditions and limitations developed in the WTP permitting process. [WAC 246-247-040 (3) & (4)]

11) Any additional licensing necessitated by plant design changes may require additional or different controls for radioactive air emissions. A needed change in the footprint of the plant based on these needs shall not be considered justification for not installing the required controls. [WAC 246-247-040 (3) & (4)]

12) Approval of BARCT and operational procedures for the Waste Treatment Plant are based on the design plant radioactive waste processing capacity as estimated in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant," BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev. 1, dated 14 June 2002. The Washington Department of Health reserves the right to require additional control technology and/or monitoring, different emissions limits, and different or additional conditions, and limitations in the case that future plant design changes should result in significantly different design radioactive waste throughput.

    Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC. [WAC 246-247-040 (3)]

13) Conditions and Limitations for construction activities must be documented in an established procedure matrix or commitment matrix database within 90 days after full construction authorization is received from WDOH. The procedure matrix or commitment matrix database for operational conditions shall be completed no later than 180 days before receipt of radioactive waste into the WTP to start Hot Commissioning and identify the specific procedures which will satisfy the Conditions and Limitations. This requirement may be satisfied for such of these Conditions and Limitations as are related only to the operational phase of radioactive waste processing (as opposed to the construction of the facility) by descriptions of specific procedures which will be completed no later than 90 days prior to the hot commissioning of the facility. [WAC 246-247-040(5); WAC 246-247-060(5); WAC 246-247-075(6); ASME NQA-1-1997]

14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance. [WAC 246-247-060-(2)(d)]

15) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. Prior to commencement of testing of a regulated system, the WTP shall provide a schedule for testing of all regulated components of that system to WDOH. The department reserves the right to observe such tests. [WAC 246-247-060(4)]

16) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards. [WAC 246-247-040(5); WAC 246-247-060(6)WAC 246-247-075(6); 40CFR61.93(b)(2)(iv); 40CFR61, Appendix B, Method 114]

17) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10).

18) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures. [WAC 246-247-075(12)]

19) The facility must be able to demonstrate the reliability and accuracy of emissions data from this emission unit. [WAC 246-247-075(13]

20) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter. [WAC 246-247-080(1)]

21) The department may require an ALARACT demonstration at any time. [WAC 246-247-080(1)]

22) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. [WAC 246-247-080(2)]

23) The facility shall report all measured or calculated emissions annually. [WAC 246-247-080(3)]

24) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5). [WAC 246-247-080(5)]

25) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity shall not be considered permanently shut down or completed until a report of closure is received and approved by the Department of Health.

    Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity. All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8). [WAC 246-247(6) and (8)]

26) All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the WDOH. [40 CFR 61.95; WAC 246-247-080(8)]

27) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection. WDOH inspectors shall be allowed to use audio/visual equipment to document inspections. [WAC 246-247-080(9)]

28) The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The USDOE shall allow access to classified documents by representatives of the department with the appropriate clearance and demonstrable need-to-know. [WAC 246-247-080(10)]

29) (a) The DOE shall ensure all emission unit components, design, construction, testing and operation shall be carried out as described in the WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" and the WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003. [WAC 246-247-120] [WAC 246-247-120]

(b) Emission unit components design, construction, testing, and operation different from those identified in WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" and the WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003 are not approved, and if carried out, are at risk of enforcement action pursuant to WAC 246-247-100. [WAC 246-247-120]

c Should a deviation to a standard be identified after start of construction, WDOH approval of the deviation shall be obtained prior to installation of the system or component. The procedure for the compliance matrices maintenance shall be followed in this event. [WAC 246-247-120]

(d) Within 90 days after starting activities granted by this approval, a procedure must be provided to WDOH identifying how the compliance matrix outlining compliance with the control technology standards shall be maintained and updated. [WAC 246-247-120]

30) Prior to installation of the following ventilation components, complete documentation verifying compliance with the applicable standards the WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" and the WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated Jun 5, 2003 shall be made available for review and approval by WDOH: HEPA filter housing, exhaust fans, dampers, ductwork, and indication devices. [WAC 246-247-120]

31) The monitoring system for this emission unit shall be designed and operated in full compliance to

ANSI N13.1-1999. Prior to installation of emission unit monitoring systems final design of the monitoring systems shall be provided to WDOH for review and approval. [WAC 246-247-075(2); WAC 246-247-120; 40 CFR Part 61.93]

32) The annual ILAW production from the LAW plant shall not exceed 1.825 E4 metric tons/year, based on glass as the waste form.[WAC 246-247-030(5); WAC 246-47-110 (10)]

33) HEPA filters shall be tested in-place after installation and at least annually thereafter. The test shall be performed in accordance with Section TA of "Code on Nuclear Air and Gas Treatment, ASME AG-1-1997". Tests shall demonstrate that each filter bank has a removal efficiency no less than 99.95%.[WAC 246-247-120]

34) Radial flow HEPA filter qualification certification testing must be performed by an independent test facility in accordance with the requirements of "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. Prior to installation of the radial flow HEPA filters that are installed for hot commissioning, the certification test results shall be provided to WDOH for qualification concurrence of the radial flow HEPA filters to "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. [WAC 246-247-120]

35) Total design flow through each HEPA filter bank shall not exceed the maximum rated flowrate for the individual HEPA filters multiplied by the number of filters in the bank.

The actual flowrate through each filter bank shall be verified and results of this demonstration shall be presented to WDOH for approval prior to hot startup. [WAC 246-247-120]

36) The USDOE shall develop, and submit to WDOH for approval, criteria for an annual USDOE inspection of the overall system integrity of this unit (e.g., corrosion damage, leakage, vibration damage, structural damage, and component deterioration). This inspection shall include determination of need for any replacements. A log of inspection findings shall be maintained in a format approved for this emission unit by the WDOH. [WAC 246-247-120]

37) USDOE shall provide to WDOH for approval a proposal for tracking the annual possession quantity (APQ) for this emission unit to WDOH prior to hot commissioning. [WAC 246-247-080 (7)]

38) For the equipment identified as control technology, ancillary equipment, protective features, and protective equipment under this approval, the USDOE shall:

- provide critical operating parameters;
-develop acceptable operating ranges;
-develop operating procedures to monitor and maintain these parameters;
-provide descriptions of procedures to WDOH for review and approval.

These actions shall be completed prior to receiving approval for accepting radioactive material into the WTP. [WAC 246-247-120]

39) The USDOE shall provide test results to demonstrate to the WDOH that HEPA filters in this emission control unit are operating at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. The results of these tests shall be provided to the WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

40) The differential pressure across each filter bank shall be monitored, recorded, and trended. Specifications for instrumentation shall be provided to WDOH prior to installation.

Prior to hot commissioning, the range of differential pressure which shall be maintained across the HEPA filter bank shall be provided to WDOH. [WAC 246-247-120]

41) Prior to cold commissioning, the USDOE shall provide documentation to the WDOH for approval to demonstrate that humidity in the airstream entering the HEPA filter bank shall be maintained below the manufacturer's specified maximum. [WAC 246-247-120]

42) Surface concentrations of smearable contamination for surface areas within C3 ventilation areas shall not exceed 100,000 dpm/100 cm2 for beta/gamma emitters or 1000 dpm/100 cm2 for alpha emitters. [WAC 246-247-110 (10, 11, 12, 13)]

43) The USDOE shall perform radiation surveys on at least a quarterly basis of the smearable surface radioactive contamination of exposed surface areas ventilated by emission unit LV-S1. The USDOE shall use the data from these surveys to demonstrate that the annual average surface concentration of beta/gamma emitters does not exceed 100,000 dpm/100 cm2 over a surface area of 270 m2 , and that the annual average surface concentration of alpha emitters does not exceed 1000 dpm/100 cm2 over a surface area of 270 m2 . [WAC 246-247-110 (10, 11, 12, 13)]

44) If electrical power to operate exhaust fans for this emission unit fails, normal operations within this emission unit with the potential to produce particulates shall cease until power is restored. [WAC 246-247-120]

45) Differential pressures shall be monitored between C2 and C3 areas to ensure air flow is from the C2 to C3 areas.

Differential pressures shall be monitored between C3 and C5 areas to ensure air flow is from the C3 to C5 areas. [WAC 246-247-120]

46) Interlocks shall be in place to prevent operation of the LV-S1 emission unit upon loss of power to the C5 ventilation. [WAC 246-247-120]

47) Backflow dampers between C3 and C5 ventilation systems must comply with "AMCA Publication 500 . Permission to use this standard in this application is based on information submitted to WDOH by the WTP on Dec. 17, 2002. [WAC 246-247-120]

48) For emission unit LV-S1, periodic confirmatory emissions sampling for particulates shall be performed, with analyses for gross alpha and gross beta/gamma. [WAC 246-247-040 (1); WAC 246-247-075]

49) Analysis and quality assurance of stack sampling shall follow the requirements of 40 CFR 61 Appendix B Method 114 sections 3 and 4. [WAC 246-247-040 (1); WAC 246-247-075]

50) All HEPA filter banks in this unit's emission control system shall be subjected to aerosol penetration tests in accordance with "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", and the results of these tests shall be provided to WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

51) Air sample transport lines shall be designed to prevent moisture condensation within the lines. Design details shall be provided to WDOH prior to cold commissioning. [WAC 246-247-120]

52) Volume reduction equipment ("HEPA Compactors") shall not be incorporated into areas ventilated by emission unit LV-S1. [WAC 246-247-120]

53) WTP shall identify maintenance activities that will require localized controls for particulates. Design details of the controls shall be provided to WDOH for approval prior to hot commissioning. [WAC 246-247-120]

Approval Number: Not Assigned **NOC ID: 511**

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CONSTRUCTION OF (WTP) LAW VITRIFICATION PLANT

Emission Unit Name: LV-S2 **Emission Unit ID** 550

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT** ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	Two stages of HEPA filtration. A total of ten banks of primary HEPAs nine in operation and one in standby. Each bank contains four filters. A total ten banks of secondary HEPAs nine in operation and one in standby. Each bank contains four filters.
	Exhaust Fan	2	One in operation and one in standby.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075	Appendix B, Method 114(3) and (4) .	Am-241 and Sr-90	Continuous

Sampling Requirements: Record Sampling

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

12/05/2002 NOC received June 26, 2002.

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
2) This emission unit does not have an abated PTE. This emission unit does not have an unabated PTE.
3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
   the receipt of low-activity waste feed from the Pretreatment Facility and conversion of the waste slurry

and glass formers into molten glass. See process descriptions listed below for the individual emission units.

4) This NOC does not have "Annual Possession Quantity" limits.

5) The WDOH has determined that BARCT for emission unit LV-S2 is a system comprising the following control technology, ancillary equipment, protective features, and protective equipment, in the following order: two stages of High-Efficiency Particulate Air (HEPA) filtration, and Exhaust Fans.

The maximum differential pressure across each HEPA filter bank shall be measured by capacitive pressure sensors.

A minimum differential pressure measurement combined with a calculated total airflow shall be used to check for HEPA Filter bypass. Airflow shall be measured and monitored at the exhaust stack by air pressure probes located to effectively read average air velocity pressure and extract a total airflow. Loss of differential pressure without a coincident reduction in airflow is indicative of filter bypass.

Space temperatures from which C5 air is exhausted shall be measured as the inlet airstream temperature for each HEPA filter bank by platinum based resistance temperature detectors (RTDs). Thermocouples shall be used in less critical or in higher temperature streams, with careful attention to the design issues to avoid misapplication. The C5V exhaust air stream temperature shall at all times be above the dewpoint, therefore Relative Humidity (RH) for this emission unit shall not be a required HEPA operating parameter nor shall an indication device be required. Should design or operations change in such a way that RH becomes a key operating parameter for the HEPA banks of this emission unit, an indication device shall be required prior to implementing the change.

Prior to cold commissioning the BARCT process must be completed for approval by WDOH for all indication devices and parameters for all the required BARCT controls and protective features of this emission unit.

Prior to the receipt of waste material the operating ranges for each of the indication devices for all the required BARCT controls and protective features of this emission unit must be provide to WDOH for approval. [WAC 246-247-030(6); WAC 246-247-040(3); WAC 246-247-120]

6) No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to the following:

-LAW melter shell (LSM) or enclosure;
-removal of consumables (bubbler assemblies, refractory thermocouples, airlifts, level detectors, feed nozzles, and film coolers) from the melter within the LSM gallery;
-bubbler shearing and other consumable size reduction;
-filling of consumable waste drums;
-LAW melter feed system;
-LAW container handling system; and
-Carbon dioxide blasting for immobilized glass container decontamination and monitoring;
-Sealing of filled ILAW canisters.

Detailed descriptions of activities in the areas ventilated by this emission unit will be provided to WDOH prior to cold commissioning. The WDOH reserves the right to determine if changes in this

process description constitute a significant modification under WAC 246-247-030 (16) & (25). [WAC 246-247-110(5); WAC 246-247-110(8); WAC 246-247-110(10); WAC 246-247-110(13)]

7) These Conditions and Limitations apply only to the construction of the emission unit and do not allow operation of the emission unit. Prior to operation of this emission unit under "hot commissioning activities" additional conditions and limitations must be obtained from WDOH. [WAC 246-247-060(1)]

8) A minimum of one year prior to cold commissioning of the Waste Treatment Plant, the licensee shall recalculate radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units and submit this information to WDOH together with a request for permission to commence waste processing. The WDOH shall consider this information prior to issuing a license to operate. The license to operate shall contain such additional conditions and limitations as WDOH shall deem necessary and appropriate. [WAC 246-247-110 (10,11, 12, 13, 14, 15)]

9) DOE and its contractor are fully liable for the design of the Waste Treatment Plant to comply with all applicable laws and regulations and to keep commitments made in all applications to construct under WAC 246-247, including designs completed and proposed to the WDOH and portions not yet designed. [WAC 246-247-110 (5)]

10) DOE shall construct the Waste Treatment Plant at its own risk. DOE shall remove or alter any control technology components, and/or any, foundations, support systems, or ancillary construction which are later found not to be in compliance with the applicable standards referenced in WAC 246-247-040 or which are not in compliance with conditions and limitations developed in the WTP permitting process. [WAC 246-247-040 (3) & (4)]

11) Any additional licensing necessitated by plant design changes may require additional or different controls for radioactive air emissions. A needed change in the footprint of the plant based on these needs shall not be considered justification for not installing the required controls. [WAC 246-247-040 (3) & (4)]

12) Approval of BARCT and operational procedures for the Waste Treatment Plant are based on the design plant radioactive waste processing capacity as estimated in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant," BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev. 1, dated 14 June 2002. The Washington Department of Health reserves the right to require additional control technology and/or monitoring, different emissions limits, and different or additional conditions, and limitations in the case that future plant design changes should result in significantly different design radioactive waste throughput.Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC.[WAC 246-247-040 (3)]

13) Conditions and Limitations for construction activities must be documented in an established procedure matrix or commitment matrix database within 90 days after full construction authorization is received from WDOH. The procedure matrix or commitment matrix database for operational conditions shall be completed no later than 180 days before receipt of radioactive waste into the WTP to start Hot Commissioning and identify the specific procedures which will satisfy the Conditions and Limitations. This requirement may be satisfied for such of these Conditions and Limitations as are related only to the operational phase of radioactive waste processing (as opposed to the construction of the facility) by descriptions of specific procedures which will be completed no later than 90 days prior to the hot

commissioning of the facility. [WAC 246-247-040(5); WAC 246-247-060(5); WAC 246-247-075(6); ASME NQA-1-1997]

14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance. [WAC 246-247-060-(2)(d)]

15) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. Prior to commencement of testing of a regulated system, the WTP shall provide a schedule for testing of all regulated components of that system to WDOH. The department reserves the right to observe such tests. [WAC 246-247-060(4)]

16) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards. [WAC 246-247-040(5); WAC 246-247-060(6)WAC 246-247-075(6); 40CFR61.93(b)(2)(iv); 40CFR61, Appendix B, Method 114]

17) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10).

18) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures. [WAC 246-247-075(12)]

19) The facility must be able to demonstrate the reliability and accuracy of emissions data from this emission unit. [WAC 246-247-075(13]

20) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter. [WAC 246-247-080(1)]

21) The department may require an ALARACT demonstration at any time. [WAC 246-247-080(1)]

22) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. [WAC 246-247-080(2)]

23) The facility shall report all measured or calculated emissions annually [WAC 246-247-080(3)]

24) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5). [WAC 246-247-080(5)]

25) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity shall not be considered permanently shut down or completed until a report of closure is received and approved by the Department of Health. Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion,

to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity. All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8). [WAC 246-247(6) and (8)]

26) All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the WDOH. [40 CFR 61.95; WAC 246-247-080(8)]

27) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection. WDOH inspectors shall be allowed to use audio/visual equipment to document inspections. [WAC 246-247-080(9)]

28) The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The USDOE shall allow access to classified documents by representatives of the department with the appropriate clearance and demonstrable need-to-know. [WAC 246-247-080(10)]

29) (a) The DOE shall ensure all emission unit components, design, construction, testing and operation shall be carried out as described in the WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" [WAC 246-247-120] [WAC 246-247-120](b) Emission unit components design, construction, testing, and operation different from those identified in WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" are not approved, and if carried out, are at risk of enforcement action pursuant to WAC 246-247-100. [WAC 246-247-120](c) Should a deviation to a standard be identified after start of construction, WDOH approval of the deviation shall be obtained prior to installation of the system or component. The procedure for the compliance matrices maintenance shall be followed in this event. [WAC 246-247-120](d) Within 90 days after starting activities granted by this approval, a procedure must be provided to WDOH identifying how the compliance matrix outlining compliance with the control technology standards shall be maintained and updated. [WAC 246-247-120]

30) Prior to installation of the following ventilation components, complete documentation verifying compliance with the applicable standards the WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" shall be made available for review and approval by WDOH: HEPA filter housing, exhaust fans, dampers, ductwork, and indication devices. [WAC 246-247-120]

31) The monitoring system for this emission unit shall be designed and operated in full compliance to ANSI N13.1-1999. Prior to installation of emission unit monitoring systems final design of the monitoring systems shall be provided to WDOH for review and approval. [WAC 246-247-075(2); WAC 246-247-120; 40 CFR Part 61.93]

32) The annual ILAW production from the LAW plant shall not exceed 1.825 E4 metric tons/year, based on glass as the waste form. [WAC 246-247-030(5); WAC 246-47-110 (10)]

33) HEPA filters shall be tested in-place after installation and at least annually thereafter. The test shall be performed in accordance with Section TA of "Code on Nuclear Air and Gas Treatment, ASME AG-1-1997". Tests shall demonstrate that each filter bank has a removal efficiency no less than 99.95%. [WAC 246-247-120]

34) Radial flow HEPA filter qualification certification testing must be performed by an independent test facility in accordance with the requirements of "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. Prior to installation of the radial flow HEPA filters that are installed for hot commissioning, the certification test results shall be provided to WDOH for qualification concurrence of the radial flow HEPA filters to "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. [WAC 246-247-120]

35) Total design flow through each HEPA filter bank shall not exceed the maximum rated flowrate for the individual HEPA filters multiplied by the number of filters in the bank.The actual flowrate through each filter bank shall be verified and results of this demonstration shall be presented to WDOH for approval prior to hot startup. [WAC 246-247-120]

36) The USDOE shall develop, and submit to WDOH for approval, criteria for an annual USDOE inspection of the overall system integrity of this unit (e.g., corrosion damage, leakage, vibration damage, structural damage, and component deterioration). This inspection shall include determination of need for any replacements. A log of inspection findings shall be maintained in a format approved for this emission unit by the WDOH. [WAC 246-247-120]

37) USDOE shall provide to WDOH for approval a proposal for tracking the annual possession quantity (APQ) for this emission unit to WDOH prior to hot commissioning. [WAC 246-247-080 (7)]

38) For the equipment identified as control technology, ancillary equipment, protective features, and protective equipment under this approval, the USDOE shall provide critical operating parameters· develop acceptable operating ranges·develop operating procedures to monitor and maintain these parameters·provide descriptions of procedures to WDOH for review and approvalThese actions shall be completed prior to receiving approval for accepting radioactive material into the WTP. [WAC 246-247-120]·

39) The USDOE shall provide test results to demonstrate to the WDOH that HEPA filters in this emission control unit are operating at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. The results of these tests shall be provided to the WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

40) The differential pressure across each filter bank shall be monitored, recorded, and trended. Specifications for instrumentation shall be provided to WDOH prior to installation.Prior to hot commissioning, the range of differential pressure which shall be maintained across the HEPA filter bank shall be provided to WDOH. [WAC 246-247-120]

41) Prior to cold commissioning, the USDOE shall provide documentation to the WDOH for approval to demonstrate that humidity in the airstream entering the HEPA filter bank shall be maintained below the manufacturer's specified maximum. [WAC 246-247-120]

42) Alternate power supplied by the generators shall be available for the exhaust fans upon loss of normal facility electrical power. [WAC 246-247-120]

43) Differential pressures shall be monitored between C3 and C5 areas to ensure air flow is from the C3 to C5 areas. [WAC 246-247-120]

44) Interlocks shall be in place to prevent operation of the LV-S1 emission unit upon loss of power to the C5 ventilation. [WAC 246-247-120]

45) Backflow dampers between C3 and C5 ventilation systems must comply with "AMCA Publication 500. Permission to use this standard in this application is based on information submitted to WDOH by the WTP on Dec. 17, 2002. [WAC 246-247-120]

46) Emission unit LV-S2 shall be continuously sampled. Radionuclides which contribute 10% of the unabated dose or greater, produce a unabated dose of 0.1mrem/yr, and radionuclides that contribute 25% of the abated dose or greater shall be sampled, analyzed, and reported. This shall include at a minimum Am-241 and Sr-90.Prior to hot commissioning, the procedure to manage down time or failure time of continuous sampling equipment will be developed and submitted to WDOH for review and approval. [WAC 246-247-040 (1); WAC 246-247-075]

47) Analysis and quality assurance of stack sampling shall follow the requirements of 40 CFR 61 Appendix B Method 114 sections 3 and 4. [WAC 246-247-040 (1); WAC 246-247-075]

48) All HEPA filter banks in this unit's emission control system shall be subjected to aerosol penetration tests in accordance with "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", and the results of these tests shall be provided to WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

49) Air sample transport lines shall be designed to prevent moisture condensation within the lines. Design details shall be provided to WDOH prior to cold commissioning. [WAC 246-247-120]

50) Volume reduction equipment ("HEPA Compactors") shall not be incorporated into areas ventilated by emission unit LV-S2. [WAC 246-247-120]

51) WTP shall identify maintenance activities that will require localized controls for particulates. Design details of the controls shall be provided to WDOH for approval prior to hot commissioning. [WAC 246-247-120]

Approval Number: Not Assigned **NOC ID: 511**

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CONSTRUCTION OF (WTP) LAW VITRIFICATION PLANT

Emission Unit Name: ILAW-C2 **Emission Unit ID** 752

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	One stage of HEPA filtration. A total of three banks of primary HEPAs two in operation and one in standby. Each bank contains four filters.
	Exhaust Fan	2	Two in operation.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075	Appendix B, Method 114(3) and (4)	Gross Alpha and Gross Beta/Gamma	Shall be determined prior to cold commissioning
Sampling Requirements:	Record Sampling		

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

12/05/2002 NOC received June 26, 2002.

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
2) This emission unit does not have an abated PTE. This emission unit does not have an unabated PTE.
3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
   the receipt of low-activity waste feed from the Pretreatment Facility and conversion of the waste slurry and glass formers into molten glass. See process descriptions listed below for the individual emission units.
4) This NOC does not have "Annual Possession Quantity" limits.

5) The WDOH has determined that BARCT for emission unit ILAW-C2 is a system comprising the following control technology, ancillary equipment, protective features, and protective equipment, in the following order: a single stage of High-Efficiency Particulate Air (HEPA) filtration, and Exhaust Fans.

   The maximum differential pressure across each HEPA filter bank shall be measured by capacitive pressure sensors.

   A minimum differential pressure measurement combined with a calculated total airflow shall be used to check for HEPA Filter bypass. Airflow shall be measured and monitored at the exhaust stack by air pressure probes located to effectively read average air velocity pressure and extract a total airflow. Loss of differential pressure without a coincident reduction in airflow is indicative of filter bypass.

   Space temperatures from which C2 air is exhausted shall be measured as the inlet airstream temperature for each HEPA filter bank by platinum based resistance temperature detectors (RTDs). Thermocouples shall be used in less critical or in higher temperature streams, with careful attention to the design issues to avoid misapplication. The C2V exhaust air stream temperature shall at all times be above the dewpoint, therefore Relative Humidity (RH) for this emission unit shall not be a required HEPA operating parameter nor shall an indication device be required. Should design or operations change in such a way that RH becomes a key operating parameter for the HEPA banks of this emission unit, an indication device shall be required prior to implementing the change.

   Prior to cold commissioning the BARCT process must be completed for approval by WDOH for all indication devices and parameters for all the required BARCT controls and protective features of this emission unit.

   Prior to the receipt of waste material the operating ranges for each of the indication devices for all the required BARCT controls and protective features of this emission unit must be provide to WDOH for approval. [WAC 246-247-030(6); WAC 246-247-040(3); WAC 246-247-120]

6) No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to the following:

   -Storage of sealed canisters of glass-immobilized low-activity waste.

   Detailed descriptions of activities in the areas ventilated by this emission unit will be provided to WDOH prior to cold commissioning. The WDOH reserves the right to determine if changes in this process description constitute a significant modification under WAC 246-247-030 (16) & (25). [WAC 246-247-110(5); WAC 246-247-110(8); WAC 246-247-110(10); WAC 246-247-110(13)]

7) These Conditions and Limitations apply only to the construction of the emission unit and do not allow operation of the emission unit. Prior to operation of this emission unit under "hot commissioning activities" additional conditions and limitations must be obtained from WDOH. [WAC 246-247-060(1)]

8) A minimum of one year prior to cold commissioning of the Waste Treatment Plant, the licensee shall recalculate radionuclide feed rates, annual possession quantities, release rates, source terms, and MEI doses for all WTP emission units and submit this information to WDOH together with a request for permission to commence waste processing. The WDOH shall consider this information prior to issuing a license to operate. The license to operate shall contain such additional conditions and

limitations as WDOH shall deem necessary and appropriate. [WAC 246-247-110 (10,11,12,13,14,15)]

9) DOE and its contractor are fully liable for the design of the Waste Treatment Plant to comply with all applicable laws and regulations and to keep commitments made in all applications to construct under WAC 246-247, including designs completed and proposed to the WDOH and portions not yet designed. [WAC 246-247-110 (5)]

10) DOE shall construct the Waste Treatment Plant at its own risk. DOE shall remove or alter any control technology components, and/or any, foundations, support systems, or ancillary construction which are later found not to be in compliance with the applicable standards referenced in WAC 246-247-040 or which are not in compliance with conditions and limitations developed in the WTP permitting process. [WAC 246-247-040(3) & (4)]

11) Any additional licensing necessitated by plant design changes may require additional or different controls for radioactive air emissions. A needed change in the footprint of the plant based on these needs shall not be considered justification for not installing the required controls. [WAC 246-247-040(3) & (4)]

12) Approval of BARCT and operational procedures for the Waste Treatment Plant are based on the design plant radioactive waste processing capacity as estimated in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant," BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev. 1, dated 14 June 2002. The Washington Department of Health reserves the right to require additional control technology and/or monitoring, different emissions limits, and different or additional conditions, and limitations in the case that future plant design changes should result in significantly different design radioactive waste throughput.

    Any changes in the design which constitute an increase in radioactive air emissions potential-to-emit subsequent to this approval may, at WDOH's discretion, constitute a modification of the facility, as defined by WAC 246-247-030(16), requiring additional licensing, including a resubmittal of BARCT and a new NOC. [WAC 246-247-040(3)]

13) Conditions and Limitations for construction activities must be documented in an established procedure matrix or commitment matrix database within 90 days after full construction authorization is received from WDOH. The procedure matrix or commitment matrix database for operational conditions shall be completed no later than 180 days before receipt of radioactive waste into the WTP to start Hot Commissioning and identify the specific procedures which will satisfy the Conditions and Limitations. This requirement may be satisfied for such of these Conditions and Limitations as are related only to the operational phase of radioactive waste processing (as opposed to the construction of the facility) by descriptions of specific procedures which will be completed no later than 90 days prior to the hot commissioning of the facility. [WAC 246-247-040(5); WAC 246-247-060(5); WAC 246-247-075(6); ASME NQA-1-1997]

14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance. [WAC 246-247-060-(2)(d)]

15) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. Prior to commencement of testing of a regulated system, the WTP shall provide a schedule for testing of all regulated components of that system to WDOH. The department reserves the right to observe such tests. [WAC 246-247-060(4)]

16) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards. [WAC 246-247-040(5); WAC 246-247-060(6); WAC 246-247-075(6); 40CFR61.93(b)(2)(iv); 40CFR61, Appendix B, Method 114]

17) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10).

18) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures. [WAC 246-247-075(12)]

19) The facility must be able to demonstrate the reliability and accuracy of emissions data from this emission unit. [WAC 246-247-075(13)]

20) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter. [WAC 246-247-080(1)]

21) The department may require an ALARACT demonstration at any time. [WAC 246-247-080(1)]

22) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. [WAC 246-247-080(2)]

23) The facility shall report all measured or calculated emissions annually. [WAC 246-247-080(3)]

24) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5). [WAC 246-247-080(5)]

25) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity shall not be considered permanently shut down or completed until a report of closure is received and approved by the Department of Health.

    Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity. All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8). [WAC 246-247(6) and (8)]

26) All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept

at the site of the facility for at least five years and, upon request, be made available for inspection by the WDOH. [40 CFR 61.95; WAC 246-247-080(8)]

27) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection. WDOH inspectors shall be allowed to use audio/visual equipment to document inspections. [WAC 246-247-080(9)]

28) The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The USDOE shall allow access to classified documents by representatives of the department with the appropriate clearance and demonstrable need-to-know. [WAC 246-247-080(10)]

29) (a) The DOE shall ensure all emission unit components, design, construction, testing and operation shall be carried out as described in the WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" and the WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003. [WAC 246-247-120] [WAC 246-247-120]

(b) Emission unit components design, construction, testing, and operation different from those identified in WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" and the WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated Jun 5, 2003 are not approved, and if carried out, are at risk of enforcement action pursuant to WAC 246-247-100. [WAC 246-247-120]

c) Should a deviation to a standard be identified after start of construction, WDOH approval of the deviation shall be obtained prior to installation of the system or component. The procedure for the compliance matrices maintenance shall be followed in this event. [WAC 246-247-120]

d) Within 90 days after starting activities granted by this approval, a procedure must be provided to WDOH identifying how the compliance matrix outlining compliance with the control technology standards shall be maintained and updated. [WAC 246-247-120]

30) Prior to installation of the following ventilation components, complete documentation verifying compliance with the applicable standards the WDOH Code Compliance Matrix for LAW HVAC System, 24590-WTP-RPT-ENG-02-001, Rev. A, dated November 15, 2002" and the WTP Cost Benefit analysis for C2 and C3 HVAC Systems, 24590-WTP-RPT-HV-02-001, Rev. 0, dated June 5, 2003 , shall be made available for review and approval by WDOH: HEPA filter housing, exhaust fans, dampers, ductwork, and indication devices. [WAC 246-247-120]

31) The monitoring system for this emission unit shall be designed and operated in full compliance to ANSI N13.1-1999. Prior to installation of emission unit monitoring systems final design of the monitoring systems shall be provided to WDOH for review and approval. [WAC 246-247-075(2); WAC 246-247-120; 40 CFR Part 61.93]

32) The annual ILAW production from the LAW plant shall not exceed 1.825 E4 metric tons/year, based on glass as the waste form. [WAC 246-247-030(5); WAC 246-47-110 (10)]

33) HEPA filters shall be tested in-place after installation and at least annually thereafter. The test shall be performed in accordance with Section TA of "Code on Nuclear Air and Gas Treatment, ASME AG-1-1997". Tests shall demonstrate that each filter bank has a removal efficiency no less than 99.95%. [WAC 246-247-120]

34) Radial flow HEPA filter qualification certification testing must be performed by an independent test facility in accordance with the requirements of "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. Prior to installation of the radial flow HEPA filters that are installed for hot commissioning, the certification test results shall be provided to WDOH for qualification concurrence of the radial flow HEPA filters to "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", Section FC-5100. [WAC 246-247-120]

35) Total design flow through each HEPA filter bank shall not exceed the maximum rated flowrate for the individual HEPA filters multiplied by the number of filters in the bank.The actual flowrate through each filter bank shall be verified and results of this demonstration shall be presented to WDOH for approval prior to hot startup. [WAC 246-247-120]

36) The USDOE shall develop, and submit to WDOH for approval, criteria for an annual USDOE inspection of the overall system integrity of this unit (e.g., corrosion damage, leakage, vibration damage, structural damage, and component deterioration). This inspection shall include determination of need for any replacements. A log of inspection findings shall be maintained in a format approved for this emission unit by the WDOH. [WAC 246-247-120]

37) USDOE shall provide to WDOH for approval a proposal for tracking the annual possession quantity (APQ) for this emission unit to WDOH prior to hot commissioning. [WAC 246-247-080 (7)]

38) For the equipment identified as control technology, ancillary equipment, protective features, and protective equipment under this approval, the USDOE shall ·provide critical operating parameters·develop acceptable operating ranges·develop operating procedures to monitor and maintain these parameters·provide descriptions of procedures to WDOH for review and approvalThese actions shall be completed prior to receiving approval for accepting radioactive material into the WTP. [WAC 246-247-120]

39) The USDOE shall provide test results to demonstrate to the WDOH that HEPA filters in this emission control unit are operating at design removal efficiency or decontamination factor, as specified in the "Radioactive Air Emissions Notice of Construction Permit Application for the River Protection Project - Waste Treatment Plant ", BNI Document Number 24590-WTP-RPT-ENV-01-008, Rev.1, 14 June 2002. The results of these tests shall be provided to the WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

40) The differential pressure across each filter bank shall be monitored, recorded, and trended. Specifications for instrumentation shall be provided to WDOH prior to installation.

    Prior to hot commissioning, the range of differential pressure which shall be maintained across the HEPA filter bank shall be provided to WDOH. [WAC 246-247-120]

41) Prior to cold commissioning, the USDOE shall provide documentation to the WDOH for approval to demonstrate that humidity in the airstream entering the HEPA filter bank shall be maintained below the manufacturer's specified maximum. [WAC 246-247-120]

42) External surface smearable contamination concentrations for ILAW welded glass storage containers

shall not exceed 2200 dpm/100 cm2 for beta/gamma emitters or 220 dpm/100 cm2 for alpha emitters.

Surface concentrations of smearable contamination for all surface areas other than container surfaces within ILAW-C2 ventilation areas shall not exceed 1,000 dpm/100 cm2 for beta/gamma emitters or 20 dpm/100 cm2 for alpha emitters. [WAC 246-247-110(10,11,12,13)]

43) The USDOE shall perform radiation surveys on at least a quarterly basis of the smearable surface radioactive contamination of exposed surface areas ventilated by emission unit ILAW -C2. The USDOE shall use the data from these surveys to demonstrate that the annual average surface concentration of beta/gamma emitters does not exceed 1000 dpm/100 cm2 over exposed surfaces other than containers and that the annual average surface concentration of alpha emitters does not exceed 20 dpm/100 cm2 over exposed surfaces other than containers. [WAC 246-247-110 (10, 11, 12, 13)]

44) If electrical power to operate exhaust fans for this emission unit fails, normal operations within this emission unit with the potential to produce particulates shall cease until power is restored. [WAC 246-247-120]

45) Interlocks shall be in place to prevent operation of the LV-C2 emission unit upon loss of power to the C3 ventilation. [WAC 246-247-120]

46) For emission unit ILAW -C2, periodic confirmatory sampling for particulates shall be performed, with analyses for gross alpha and gross beta/gamma. [WAC 246-247-040(1); WAC 246-247-075]

47) Analysis and quality assurance of stack sampling shall follow the requirements of 40 CFR 61 Appendix B Method 114 sections 3 and 4. [WAC 246-247-040(1); WAC 246-247-075]

48) All HEPA filter banks in this unit's emission control system shall be subjected to aerosol penetration tests in accordance with "CODE ON NUCLEAR AIR AND GAS TREATMENT, ASME AG-1-1997", and the results of these tests shall be provided to WDOH at least 90 days prior to hot commissioning. [WAC 246-247-120]

49) Air sample transport lines shall be designed to prevent moisture condensation within the lines. Design details shall be provided to WDOH prior to cold commissioning. [WAC 246-247-120]

50) Volume reduction equipment ("HEPA Compactors") shall not be incorporated into Areas ventilated by emission unit ILAW-C2. [WAC 246-247-120]